

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3087

Roll No.

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B.Tech.

(SEM. V) ODD SEMESTER THEORY EXAMINATION
2010-11

MICROPROCESSORS AND APPLICATIONS

Time : 3 Hours

Total Marks : 100

Note : Attempt all questions. All questions carry equal marks.

1. Attempt any **two** parts of the following : **(10×2=20)**
- (a) (I) What is a microprocessor ? What is the difference between a microprocessor and a CPU ? Also state the difference of microprocessor and a microcomputer.
- (II) Explain the difference between the machine language and the assembly language. What are the advantages of an assembly language in comparison with high-level language ?
- (b) (I) Specify the control signal and the direction of the data flow on the data bus in a memory-write operation.
- (II) The memory address of the last location of a 1K byte memory chip is given as FBFFH. Specify the memory map.
- (c) (I) Define : instruction cycle, machine cycle, and T-state.
- (II) Write ALP for transfer the sixteen bytes of data stored in memory locations at XX50H to XX5FH to new memory locations starting at XX70H.

2. Attempt any **two** parts of the following : (10×2=20)
- (a) Explain the addressing modes of 8086 with the help of examples.
- (b) Write notes on :
- (I) 80186
 - (II) 80286.
- (c) (I) Write short notes on pipelining and memory segmentation of 8086. What are their advantages ?
- (II) Explain the following assembler directives with examples :
- (i) OFFSET
 - (ii) ASSUME
 - (iii) EVEN
 - (iv) DT
 - (v) EXTRN.

3. Attempt any **two** parts of the following : (10×2=20)
- (a) Draw and explain the interfacing of 8237 and 8086. Explain various modes of 8237.
- (b) (I) How the data can be transmitted and received serially? Explain with example.
- (II) Explain the following 8251 signals :
 \overline{DSR} , \overline{DTR} , C/\overline{D} , SYNDT/BD, TXE
- (c) (I) Explain the bit set/reset mode of 8255.
- (II) Interface a 4×4 matrix keyboard to the microprocessor using 8279. Also discuss the operation.

4. Attempt any **two** parts of the following : (10×2=20)
- (a) List the difference between 8253 and 8254. Write a program to generate a square wave of 1 kHz frequency on OUT 1 pin of 8253/54. Assume CLK1 frequency is 1 MHz and address for control register=OBH, counter 1 = 09H and counter 2 = OAH
 - (b) Write a program for DAC 0808.
 - (I) to generate square wave
 - (II) to generate triangular wave.
 - (c) (I) Explain the successive approximation A/D converter technique with the help of block diagram.
(II) Explain the R/2R ladder technique of D/A conversion. Also give the advantage of it over binary weighted resistor technique.

5. Attempt any **two** parts of the following : (10×2=20)
- (a) (I) Draw and explain instructions format of PowerPC.
(II) Explain the bit pattern for machine status register in PowerPC.
 - (b) (I) Explain any five Pentium processor signals.
(II) Compare microcontroller and microprocessor.
 - (c) (I) Discuss the memory organisation of 8051.
(II) Discuss the 8051 addressing mode. Give one example of each addressing mode.

